Abstract of the Disclosure

Brachytherapy is carried out with an injection device with a needle to inject a radioactive seed into a patient's body. A space-fixed detector detects radiation from radiation emitters affixed to the injection device to determine the position of a deposited seed from the needle with reference to a space-fixed coordinate system. Markers may be affixed to the patient's body such that a body-fixed coordinate system can be determined in real time by an imaging device. Alternatively, earlier obtained patient's anatomical data stored in a computer may be referenced. After positions of the seeds which have been injected are thus ascertained in real time with reference to a body-fixed coordinate system, the stored anatomical data may be updated and a radiation dose distribution can be calculated on the basis of the determined seed positions. The calculated radiation dose distribution can be displayed for a visual inspection and may be compared with a planned distribution such that the injection device can be robotically controlled to deposit the next seed at a desired position inside the patient's body for bringing about the planned distribution most effectively.